

February 16, 2001

Mr. Morris Brown
Vice President, Operations
United States Enrichment Corporation
2 Democracy Center
6903 Rockledge Drive
Bethesda, MD 20817

SUBJECT: PRELIMINARY COMPLIANCE EVALUATION REPORT FOR THE HIGHER ASSAY
UPGRADE PROJECT AMENDMENT REQUEST (TAC NO. L32145)

Dear Mr. Brown:

The purpose of this letter is to request that you commit in writing to resolve the programmatic issues outlined in Enclosure 1 and to forward to you for your review and comment, the preliminary Compliance Evaluation Report (CER), contained in Enclosure 2. This CER documents the review of your higher assay upgrade project (HAUP) amendment request dated October 20, 2000, and is being sent to you for comment to correct any major technical errors which may be in the document. NRC is not requesting a detailed review for format or punctuation. Your comments concerning any major errors are due to NRC by February 23, 2001, and will be considered as appropriate.

This CER contains one certification condition regarding the use of the safe mass curve in technical safety requirement 2.4.4.4. It also contains one open issue regarding the use of the Normetex pumps. The staff is continuing to review the information submitted regarding these pumps and the final CER which is scheduled to be issued by March 16, 2001, will contain the final resolution of this issue. It should be noted that the final resolution may require a second certification condition. It should also be noted that approval of your amendment request, is contingent on satisfactory resolution of the Normetex pump issue and there being no significant findings during the operational readiness review scheduled for February 20 through March 2, 2001.

In addition to requesting your review of the CER, this letter is also requesting that you provide additional commitments to resolve programmatic weaknesses in your nuclear criticality safety (NCS) program. During the review of this amendment request, the staff identified several programmatic issues associated with the NCS program. These concerns, which were briefly discussed with you in the January 29, 2001 management meeting, are focused on USEC's NCS program and its ability to develop, update and maintain high quality nuclear criticality safety evaluations/approvals (NCSE/As).

The continued quality and maintenance of the NCSE/As is important to the U.S. Nuclear Regulatory Commission's (NRC's) finding that the safety basis of the facility will be adequately maintained in the future. In a letter dated February 9, 2001, USEC outlined actions it has taken to ensure that issues identified by the NRC during the HAUP review, were not also present in areas that were not reviewed by the NRC. The NRC compliments USEC in its self assessment and encourages USEC to continue with these activities. However, because the resolution of

the programmatic issues are directly related to NRC's preliminary findings in the CER, NRC is requesting that USEC commit in writing to resolve the issues outlined in Enclosure 1. The commitments should contain discrete actions that will be taken to resolve the issue as well as a detailed schedule by which the actions will be completed. The schedule should not include a simple end date but also significant milestones in the process. Please provide your commitments to the NRC no later than Friday, March 9, 2001.

If you have any questions related to these issues please call me on (301) 415-6332 or Heather Astwood of my staff on (301) 415-5819.

Sincerely,

Eric J. Leeds, Chief
Special Projects Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

Docket: 70-7001
Certificate: GDP-1

Enclosures: 1. Programmatic Issues Requiring
USEC Response
2. Preliminary CER

cc: Mr. Howard Pulley, Paducah
Mr. Steven A. Toelle, USEC-Headquarters
Mr. Randall M. DeVault, DOE-Oak Ridge

M. Brown

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Programmatic Issues Requiring USEC Response

1) Documentation of Safety Basis

During the review, the U.S. Nuclear Regulatory Commission (NRC) identified nuclear criticality safety evaluations/approvals (NCSE/As) which did not have an adequate discussion of the safety basis. These NCSE/As did not identify and adequately control all of the items which were being relied on for NCS, accurately represent in-plant conditions, adequately justify the assumptions contained in the analysis, or they did not distinguish between items relied on for double contingency and those discussed to demonstrate defense-in-depth. Specific examples are discussed in detail in the Compliance Evaluation Report (CER) and in Appendix B and C. It should be noted that the U.S. Enrichment Corporation (USEC) has revised the format of the NCSE/As to indicate controls as safety related items (SRIs). NRC believes that this dramatically improves the documentation of the controls and the ability of the facility to understand and track the items important to safety. However, this new format is only used for recently revised NCSE/As and is not used in the older unrevised NCSE/As.

NRC is requesting that USEC describe the specific actions they intend to take to ensure that all existing NCSE/As adequately control the items which were being relied on for NCS, accurately represent in-plant conditions, adequately justify the assumptions contained in the analysis, distinguish between items relied on for double contingency and those discussed to demonstrate defense-in-depth, and periodically audit the NCSE/As for adequacy. USEC should also identify what programmatic actions will be taken to ensure that these situations will not arise in the future either through the revision of existing NCSE/As or the creation of new ones. Please provide a schedule for completing this work.

2) Existence of Singly Contingent Accident Scenarios

Two NCSEs were identified by NRC that exhibited the existence of singly contingent accident scenarios, without the presence of a corresponding Technical Safety Requirement (TSR). USEC's TSR 3.11.5 states:

“The double contingency principle, as described in the Safety Analysis Report, shall be used as the basis for the design and operation of processes using fissionable materials. In those instances where double contingency is not met, TSRs shall be established, implemented, and maintained to prevent criticality from occurring.”

In a letter dated February 9, 2002, USEC described actions which were taken to review all NCSEs to ensure that no other NCSEs contained singly contingent scenarios with a corresponding TSR. USEC stated that they found three other situations which were corrected. NRC commends USEC for initiating these actions and is requesting that USEC submit specific programmatic actions which will be taken to ensure that no other singly contingent scenarios without a TSR will arise in the future either through the revision of existing NCSEs or the creation of new ones. Please provide a schedule for completing this work.

3) Preferred Design Approach

An important aspect of change control is the preferred design approach of Safety Analysis Report (SAR), Section 5.2.2.4, "Design Philosophy and Review," which states that when feasible, engineered controls would be used as the preferred approach over the use of administrative controls. Since, in general, administrative controls are less reliable than engineered controls, following the preferred design approach will alleviate the potential for degrading the safety basis over time by replacing reliable engineered controls with less reliable administrative controls. It is, therefore, important to have a clear rationale for choosing an administrative control over an engineered control and to adequately document this decision for future changes.

In the February 9th letter USEC states that they plan to perform a self assessment of the NCSE/As which NRC did not review to ensure that administrative controls are adequately applied. The NRC commends this action and is requesting that USEC describe in more detail the specific actions they intend to take. USEC should also identify what programmatic actions will be taken to ensure that these situations will not arise in the future either through the revision of existing NCSE/As or the creation of new ones. Please provide a schedule for completing this work.

Because the current SAR requires USEC to follow the Preferred Design Approach but does not require documentation of the basis for deviation from the requirement, NRC is requesting that USEC commit to developing additional words for the SAR which would require that the basis for using an administrative control over an engineered control be documented. A schedule for completing this work should also be submitted.

4) Use of Fixed Neutron Absorbers

During the course of the NCSA/E reviews, the staff encountered many instances in which the materials of construction were credited in criticality calculations. The presence of these materials (such as stainless or carbon steel) often was the determining factor in whether the system k_{eff} exceeded the TSR 3.11.4 limit of 0.9634. However, no neutron absorber control program had been submitted for these materials and there was no requirement to verify the material composition of these materials, either initially upon installation, or periodically. The SAR contains a brief description of the application of neutron absorbers, but there is sufficient disagreement over the precise meaning of this section to require clarification. (Note: This is applicable to any other material properties for NCS, such as reflectors.)

NRC is requesting that USEC commit to developing additional words for the SAR which would clarify that the (1) material composition of absorbers/reflectors shall be verified and modeled adequately prior to operation at higher assay; (2) degradation in the material composition and dimensions such as due to corrosion or chemical reactions shall be evaluated, and a periodic inspection of the material composition and/or dimensions shall be established with a frequency sufficient to maintain these properties within acceptable limits; and (3) all relevant physical properties of such absorbers/reflectors shall be identified and controlled. Please provide a schedule for this work.

Where materials of construction credited for NCS are present prior to approval to operate at 5.5wt% ^{235}U assay, and their exact material composition cannot be determined, USEC shall determine whether they are required to maintain subcriticality (k_{eff} below the TSR limits). If the system cannot be demonstrated adequately subcritical without crediting the materials of construction, additional controls shall be established as needed to ensure subcriticality in the event that the materials of construction are not credited.

The staff recognizes that due to the extensive operating history and age of the plant, there may be areas in which it is not feasible to determine the exact material composition of structural components. In these cases, there should be sufficient other controls such that subcriticality is ensured without reliance on the presence of the neutron absorber.